

**A preliminary study of the insect fauna of Meghalaya, India.
12. Species of the genera *Tabanus* L. and *Haematopota* Mg.
of the family Tabanidae (Diptera)**

M DATTA* and S BISWAS

Eastern Regional Station, Zoological Survey of India, Shillong 793 003

*Present address: Zoological Survey of India, 34, Chittaranjan Avenue, Calcutta 700 012

MS received 12 February 1977

Abstract. The present paper incorporates two new species of the genus *Tabanus* Linnaeus, viz., *T. meghalayensis* and *T. miniatus* and one new species of the genus *Haematopota* Meigen, viz., *H. nigrifrons* along with notes on three other species obtained from Meghalaya, India.

Keywords. Insect fauna; *Tabanus* L.; *Haematopota* Mg.; Tabanidae.

1. Introduction

Notwithstanding the veterinary importance of Tabanidae, not very many systematic works have been done on this fauna in India. Ricardo (1911a and b), while dealing with the Oriental Tabanidae, has for the first time paid attention to present a comprehensive account incorporating all the sporadic reports of the earlier workers. Subsequently, Ricardo (1914 and 1917), Brunetti (1924), Schuurmans-Stekhoven (1926), Philip (1959, 1970 and 1972), Philip and Mackerras (1959), Mackerras (1962), Chvála (1969) and, Stone and Philip (1974) have enriched the literature of the Indian Tabanidae. Senior-White (1927) has catalogued the then known species, while Basu, Menon and Sen Gupta (1952) have shown regional distribution of the species on the basis of both literature and field-records. Sen and Fletcher (1962) have, however, given a key to the species occurring in India. Apparently, as a result of these studies hitherto thirteen species of *Tabanus* and nine species of *Haematopota* amongst others are known from Meghalaya (part of erstwhile Assam). This paper provides descriptions and illustrations of two new species of *Tabanus* and one new species of *Haematopota* obtained from the Garo hills of Meghalaya. In addition, notes on three species of *Tabanus* collected are provided.

The type-specimens are deposited in the National Zoological collection of Zoological Survey of India at Calcutta.

2. Distributional records in Meghalaya

The distributional records of the Indian Tabanidae are sometimes confusing due to lack of information on the collection localities of certain species described by some

early workers. Misidentification also has added to it. Despite these anomalies, the distributional records have been noted from the literature with possible correctness pending reconfirmation in future through extensive survey. The following species described elsewhere but recorded from the geographical limit of the State by the subsequent workers are: *Tabanus rubicundus* Macquart by Bigot (1892); *T. birmanicus* Bigot; *T. leucocnematus* Bigot and *T. rubidus* Wiedemann by Ricardo (1911a); *Haematopota limbata* Bigot by Ricardo (1911b); *H. montana* Ricardo by Senior-White (1927); *T. rufiventris* Fabricius by Basu *et al* (1952); *T. indianus* Ricardo, *H. indiana* Bigot and *H. javana* Wiedemann by Sen and Fletcher (1962); and *T. striatus* Fabricius by Philip (1970).

3. Systematic account

3.1. Subfamily Tabaninae: Tribe Tabanini

Genus *Tabanus* Linnaeus

Tabanus Linnaeus, 1758, Systema Naturae, 10:601. Type-species: *Tabanus bovinus* Linnaeus (Latreille, 1810:443).

1. *Tabanus rubidus* Wiedemann

Tabanus rubidus Wiedemann, 1821, *Dipt. exot.*, 2:19. Type ♀, India: West Bengal (Copenhagen Mus.).

Material examined: India: Meghalaya, Garo Hills, Darugiri, 3 ♀♀, 10. iv. 1973, Coll. S. Biswas; Meghalaya, Garo Hills, Naphok beel, 2 ♀♀, 12. iv. 1973, Coll. S. Biswas.

Other distribution: Khasi hills of Meghalaya, Assam, West Bengal, Bihar, Orissa, Tamil Nadu, Kerala, Maharashtra, Punjab, Haryana, Delhi, Jammu and Kashmir, U. P. in India; Nepal, Pakistan, Thailand, Malaysia, Indonesia, China and Sri Lanka.

2. *Tabanus monotaeniatus* (Bigot)

Atylotus monotaeniatus Bigot, 1892

Mem. Soc. Zool. France, 5:655. Type ♀, India: Meghalaya (British Mus.)

Tabanus monotaeniatus: Ricardo, 1911

Rec. Indian Mus., 4:159.

Material examined: India: Meghalaya, Khasi Hills, Barapani, 1 ♀, 26. vii. 1969. Coll. B. Dutta.

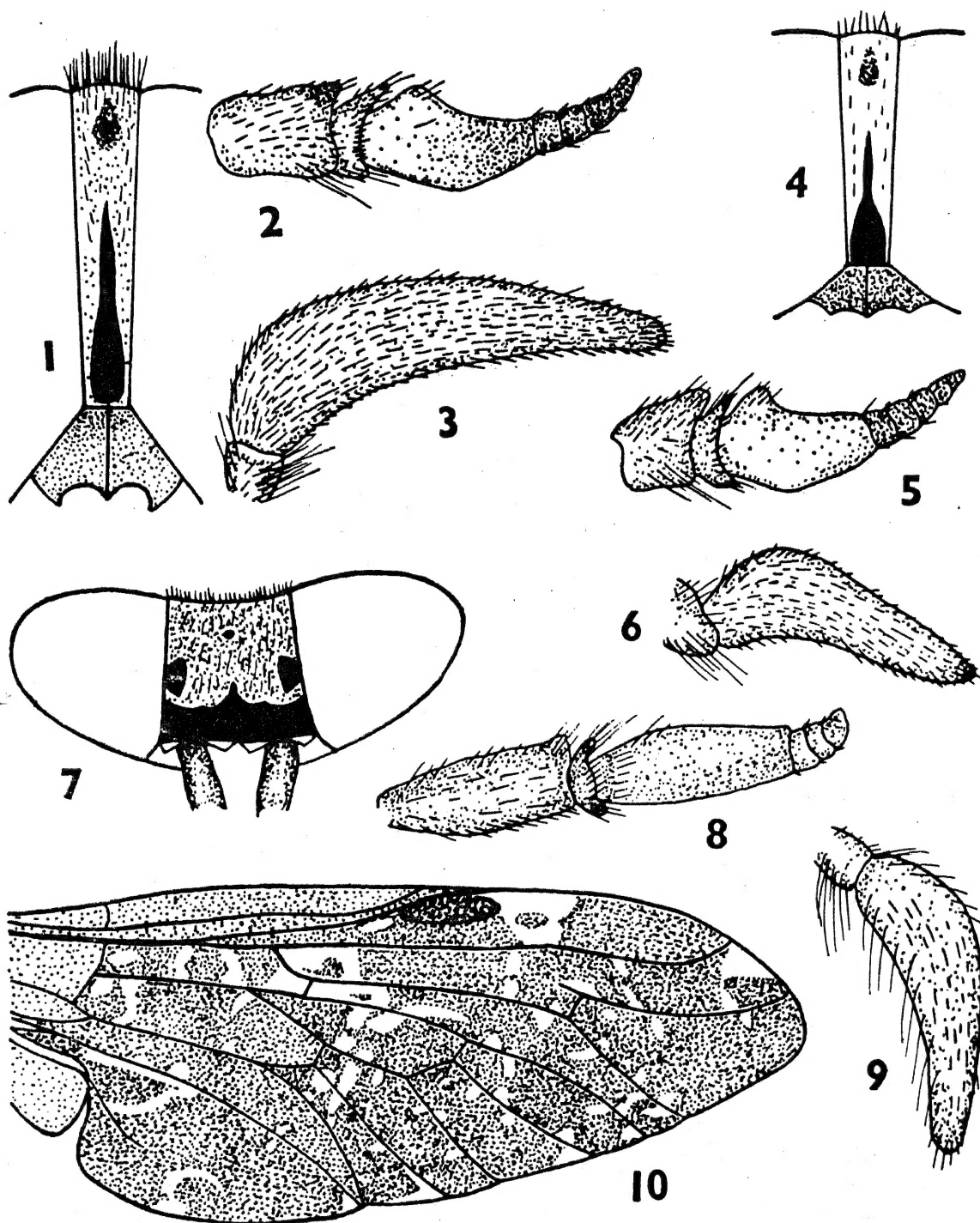
Other distribution: Assam in India; Burma and China.

3. *Tabanus meghalayensis* sp. nov. (figures 1-3).

Material available: ♀♀ (pinned).

Female: Length 15-17 mm.

Head: Eyes bare, uniformly greyish with purple and greenish tinge, unbanded (relaxed). Frons (figure 1) rather narrow, sides slightly divergent above, index 1:6.5



Figures 1-10. 1-3. *Tabanus meghalayensis* sp. nov. 1: frons. 2: antenna. 3: palpus. 4-6. *Tabanus miniatus* sp. nov. 4: frons. 5: antenna. 6: palpus. 7-10. *Haematopota nigrifrons* sp. nov. 7: frontal view of head. 8: antenna. 9: palpus 10: wing.

buff-grey but slightly reddish above, pollinose, sparse recumbent pale and dark hairs more towards vertex; vertex with dark erect hairs. Frontal callus (basal callus) tall triangular, tapering above into a narrow keel, dark grey, separated from eye margins and subcallus. Subcallus reddish brown, pollinose. Face and parafacials greyish, pollinose and pilose; beard pearlaceous white. Antenna (figure 2) about

2.5 mm long, reddish brown up to basal half of plate and rest dark grey; scape and pedicel with dark hairs, basal tooth of plate low, with short dark hairs. Palpi (figure 3) stout, blunt apically; basal segments with white hairs and a few dark hairs; apical segment only with regularly arranged black hairs.

Thorax: Notum black with two brownish submedian stripes extending from anterior margin to a little beyond presecutellum, with dark hairs and a very few pale hairs; scutellum also black, with dark and pale hairs; pleura brownish, with dark and pale hairs. Wing: 11-12 mm. long, clear; veins brownish; cell R5 open, slightly narrow apically; spur vein absent. Legs: Coxae dark grey, with white hairs; femora buff-grey, with pale tips, with long white hairs and short dark hairs; two-thirds of fore tibiae reddish brown and basal one-third buff-grey; other tibiae entirely reddish brown, with short dark and pale hairs; fore tarsi entirely black but nearly basal halves of first tarsomeres of other tarsi reddish brown; rest buff-grey, with dark hairs. Halteres: Reddish brown except greyish base of stem.

Abdomen: Terga 1-4 reddish brown, rest buff-grey; a yellow median band extending from anterior margin to tip of abdomen, covering a black spot on tergum 2, slightly narrower towards tip, with many golden hairs and a few dark hairs; all terga with pale hair fringes outwardly widening along sides. Sterna 1-2 reddish brown, rest buff-grey.

Holotype, ♀, India: Garo hills, Darugiri, 10.iv.1973, Coll. S. Biswas. Paratypes: 4 ♀♀, same data as holotype; 3 ♀♀, Garo hills, Wagensi, 5.iv.1973, Coll. S. Biswas; 21 ♀♀, Garo hills, Naphok beel, 12.iv.1973, Coll. S. Biswas.

Discussion: *Tabanus meghalayensis* sp. nov. seems to be allied to *T. agnoscibilis* Austen, 1922, described from Siam, Thailand; *T. undulans* S. Stekh., 1926, described from Malacca, Malaysia; and *T. aurilineatus* S. Stekh., 1926, described from Sumatra, Indonesia. But *agnoscibilis* is a small species (length 10.4 mm) with the tapering abdomen unlike this new species and each of *undulans* and *aurilineatus* has broad basal callus touching the eye-margins; the latter species in addition has the slender plate of the flagellum unlike that of this new species.

4. *Tabanus miniatus* sp. nov. (figures 4-6).

Material available: ♀♀ (pinned).

Female: Length 10-12 mm.

Head: Eyes bare, uniformly greyish with purple and greenish tinge, unbanded (relaxed). Frons (figure 4) narrow, sides slightly divergent above, index 1:5, buff-grey pollinose, sparse recumbent dark hairs more towards vertex; vertex with sparse dark erect hairs. Frontal callus (basal callus) tall triangular, tapering above to a long and narrow keel, reddish brown below and dark grey above, narrowly isolated from eye-margins but reaching subcallus. Subcallus dark grey, pollinose. Face and parafacials greyish, pollinose and pilose; beard pearlaceous white. Rudimentary ocelli present. Antenna (figure 5) about 2 mm long; scape and pedicel reddish brown with black hairs; plate brick-red, basal tooth of plate somewhat high, with a few short black hairs; other flagellomeres black. Palpi (figure 6) short and somewhat thin, tapering apically more or less to a point; basal segments with white hairs; apical segment with pale hairs intermixed with dark hairs.

Thorax: Notum, presecutellum and scutellum dark with golden hairs intermixed with a few dark hairs; pleura dark grey with white hairs. Wing: 9-10 mm long, clear;

veins greyish, cell R5 open; spur vein present in holotype and a few paratypes but absent in others. *Legs*: Forelegs black except two-thirds or so of tibiae brownish; mid and hind tibiae brownish; femora and tarsi somewhat pale basally, rest black. *Halteres*: Reddish brown except greyish base of stem.

Abdomen: Terga 1-2 mainly reddish except black tinge on tergum 1 medially and tergum 2 with a black median spot; tergum 3 reddish brown and other terga gradually darkening towards tip; an indistinct yellowish median stripe posteriorly; terga with black recumbent hairs intermixed with a few golden hairs; the latter forming fringes laterally. *Sterna* mainly golden yellow, gradually darkening towards tip, with golden recumbent hairs.

Holotype ♀, India: Garo hills, Wagensi, 6.iv.1973, Coll. S. Biswas. *Paratypes*: 23 ♀♀, same data as holotype.

Discussion: *Tabanus miniatus* sp. nov. is closely related to *T. diversifrons* Ricardo, 1911, described from Shillong, India, but it has comparatively a short and narrow linear extension of the frontal callus among certain other differences.

5. *Tabanus* sp.

A partially damaged female specimen of a species belonging to this genus has been obtained from Darugiri of the Garo hills, India, but specific identification is not possible in the absence of sufficient material. This species, however, appears to be allied to *T. pallipennis* Macq. (= *rufinotatus* Bigot, 1892), described from Australia, in having three longitudinal stripes on the abdomen among other similarities but this species has a single callus (frontal callus) in contrast to the existence of distinct double calli of *pallipennis* Macq.

3.2. Subfamily Tabaninae: Tribe Haematopotini

Genus *Haematopota* Meigen

Haematopota Meigen, 1803, *Mag. f. Insektenk.* (Illiger), 2: 267.

Type-species: *Tabanus pluvialis* Linnaeus, 1758: 602 (monotypy).

6. *Haematopota nigrifrons* sp. nov. (figures 7-10)

Material available: ♀♀ (pinned).

Female: Length 9-11 mm.

Head: Frons (figure 7) nearly two-thirds as wide at vertex as high, slightly widened below; dull black, with paler lateral margins, with dark recumbent hairs; midfrontal spot dot-like, black, encircled by a paler area; paired spots semi-lunar, touching eyes narrowly, separated from callus; callus dull black, shiny, approximately 4 times as wide as high, touching eyes, somewhat protuberant, winkled centrally, lower margin nearly straight but upper margin somewhat wavy with high middorsal conical projection; subcallar area greyish centrally with triangles on either side of median cleft; face and para-facials yellowish; face with one median and two lateral black spots; para-facials with a pair of black spots, upper ones small and somewhat diffused; beard white. *Antenna* (figure 8) about 2.5 mm long, greyish; scape and pedicel with black hairs; scape stout, cylindrical, subshiny, 2.5-3 times as long as thick; pedicel with strong dorsal projection; first flagellomere subequal to scape in length, and some-

what flattened; style somewhat narrow. Palpus (figure 9) pale brown, with thin black hairs, lower margin with long pale hair, more towards proximal part.

Thorax: Scutum dull black, with a narrow indistinct grey median stripe and a pair of distinct yellowish broad submedian stripes extending from anterior margin to transverse suture followed by a pair of broader stripes reaching upto scuto-scutellar suture; posterior margin of scutum yellowish with two crescentic marks; scutellum dull black but anterior margin yellowish; pleuron brownish above with white hairs, greyish below. Wing: (figure 10) 8-10 mm long, dark brown, with a single subapical band and other pale spots as figured. Haltere entirely pale except dark proximity of stem. Legs: in general dark except yellowish subbasal third of fore tibiae; greyish mid femur; two yellowish bands on mid and hind tibiae; two-thirds of basitarsomeres of mid and hind legs brownish.

Abdomen: Nearly black, with an indistinct white stripe extending from tergum 3 to tip.

Holotype ♀, India: Garo hills, Wagensi, 7.iv.1973, Coll. S. Biswas. Paratypes: 2 ♀♀, same data as holotype, 6.iv.1973 and 7.iv.1973.

Discussion: *Haematopota nigrifrons* sp. nov. somewhat resembles *H. annandalei* Ricardo, 1911, described from the Khasi hills of Meghalaya, India; *H. chekiangensis* Ôuchi, 1940, described from Chekiang, China; and *H. nathani* Stone and Philip, 1974, from Tamil Nadu, India, in wing markings, but none of these species has, however, among certain other differences, high middorsal conical projection of the frontal callus, flattened first flagellomere and subequal ratio of the latter with the scape in length.

Acknowledgements

The authors express their gratitude to C B Philip of California Academy of Sciences, San Francisco, and to L L Pechuman of Cornell University, for valuable suggestions and encouragement and for providing them with some pertinent literature; and to J E Chainey of British Museum (Natural History), London, for suggesting improvements in the paper on the basis of comparable type available with him. Sincere thanks are also due to A N T Joseph and T K Pal of Zoological Survey of India, Calcutta, and for supplying some important notes on the Indian Tabanidae. A special debt of gratitude is reserved for H Takahasi of Tokyo, Japan for his sincere inspiration and generous help in identification, provision for xerographic imprints of some pertinent literature, imparting some of his extensive knowledge of the Oriental Tabanidae, and for kindly going through the manuscript. The authors also record their appreciation of the help and co-operation rendered by the Director, Zoological Survey of India, Calcutta, and A K Ghosh, Officer-in-Charge of this Station, Shillong.

References

- Austen E E 1922 Some Siamese Tabanidae; *Bull. Ent. Res.* 12 431-455
 Basu B C, Menon P B and Sen Gupta C M 1952 Regional distribution of *Tabanus* flies in India and its relationship to the incidence of Surra; *Indian J. Vet. Sci. An. Husb.* 22 273-292

- Bigot J M F 1892 Descriptions de Diptères nouveaux; *Mém. Soc. Zool. France* 5 602-691
- Brunetti E 1924 Diptera of the Siju Cave, Garo hills, Assam; *Rec. Indian Mus.* 26 99-112
- Chvála M 1969 Einige neue oder wenig bekannte bremsen (Diptera, Tabanidae) von Nepal. *Acta Entomol. Bohemoslov.* 66 39-54
- Mackerras I M 1962 On some Oriental and Pacific tabaninae (Diptera: Tabanidae); *Pacific Ins.* 4 101-113
- Ôuchi Y 1940 Note on some horseflies belongs to Genus *Haematopota* with new description from China and Manchoukou; *J. Shanghai Sci. Inst.* (III) 4 253-263
- Philip C B 1959 Three new Tabanine Flies (Tabanidae, Diptera) from the Orient; *Indian J. Entomol.* 21 82-88
- Philip C B 1970 Further notes on Oriental Tabanidae (Diptera). IV. Descriptions of *Cydistomyia* and *Tabanus*, and other records particularly from India and Sikkim. In *H.D. Srivastava commen. Vol., Indian Vet. Res. Inst. Izatnagar, U.P.* 443-452
- Philip C B 1972 A new *Tabanus* from South India (Dipt. Tabanidae); *Entomol. Scand.* 3 159-160
- Philip C B and Mackerras I M 1959 On Asiatic and related Chrysopinae (Diptera: Tabanidae); *Philippine J. Sci.* 88 279-324
- Ricardo G 1911a A revision of the species of *Tabanus* from the Oriental region, including notes on species from surrounding countries; *Rec. Indian Mus.* 4 111-258
- Ricardo G 1911b A revision of the Oriental species of the genera of the family Tabanidae other than *Tabanus*; *Rec. Indian Mus.* 4 321-397
- Ricardo G 1914 A new species of *Tabanus* from India; *Ann. Mag. Nat. Hist. London ser. 8*, 14 359
- Ricardo G 1917 New species of *Haematopota* from India; *Ann. Mag. Nat. Hist. London ser. 8*, 19 225-226
- Schuermans-Stekhoven J H Jr 1926 The tabanids of the Dutch East Archipelago; *Treubia* (Suppl.) 6 1-551 (1926).
- Sen S K and Fletcher T B 1962 *Veterinary Entomology and Acarology for India. Indian Coun. Agric. Res.*, New Delhi, ed. i+ pp. 668.
- Senior-White R 1927 *Catalogue of Indian Insects (Tabanidae)*, Calcutta 12 1-70
- Stone A and Philip C B 1974 The Oriental Species of the Tribe Haematopotini (Diptera, Tabanidae); *Tech. Bull. U.S. Dept. Agric.* No. 1489, pp. 233

